

**Coal Mine Rescue Problem #1**  
**From the**  
**1999 National Mine Rescue Contest**  
**September 22, 1999**



**1999 NATIONAL MINE RESCUE CONTEST**  
**SEPTEMBER 22, 1999**

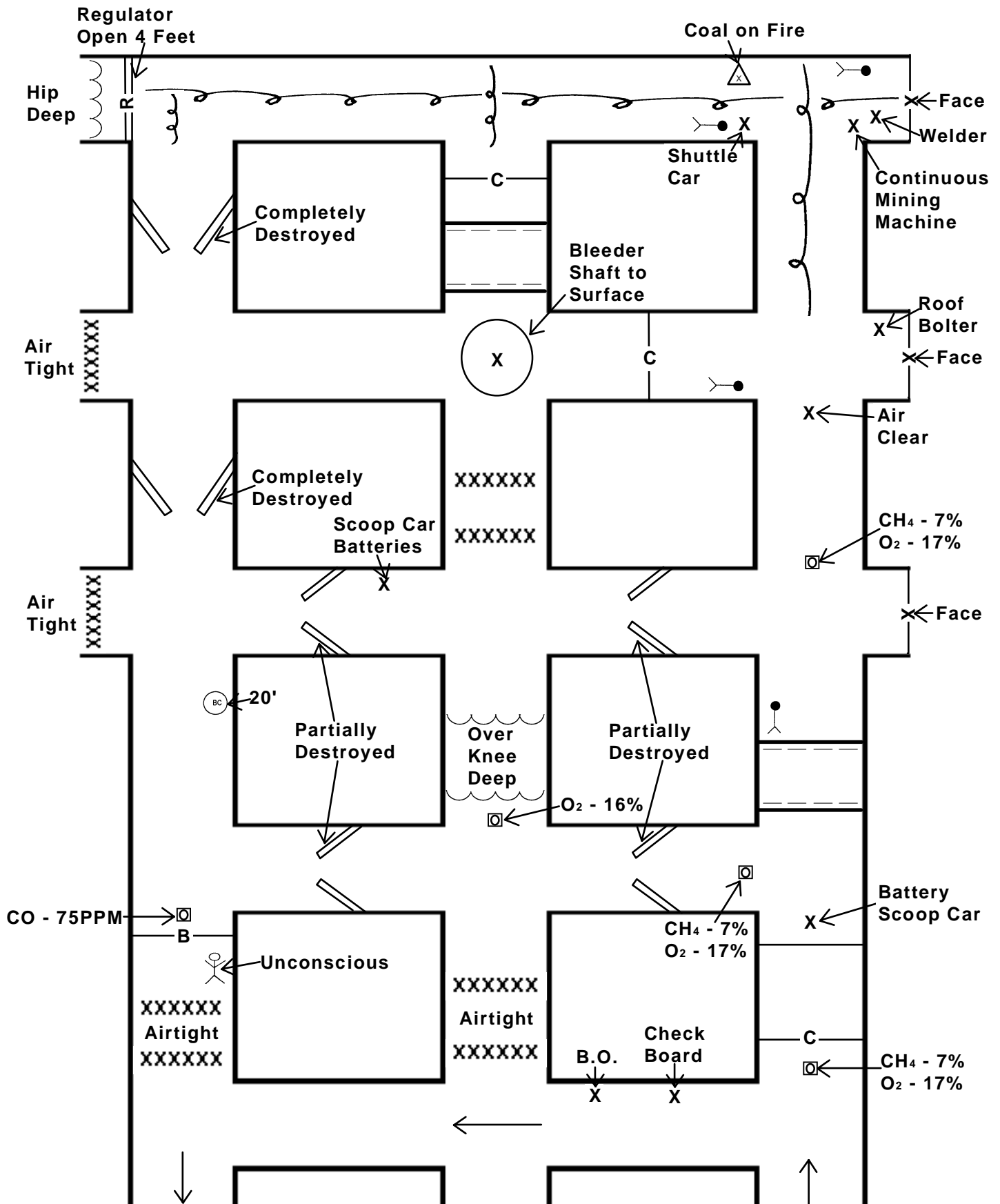
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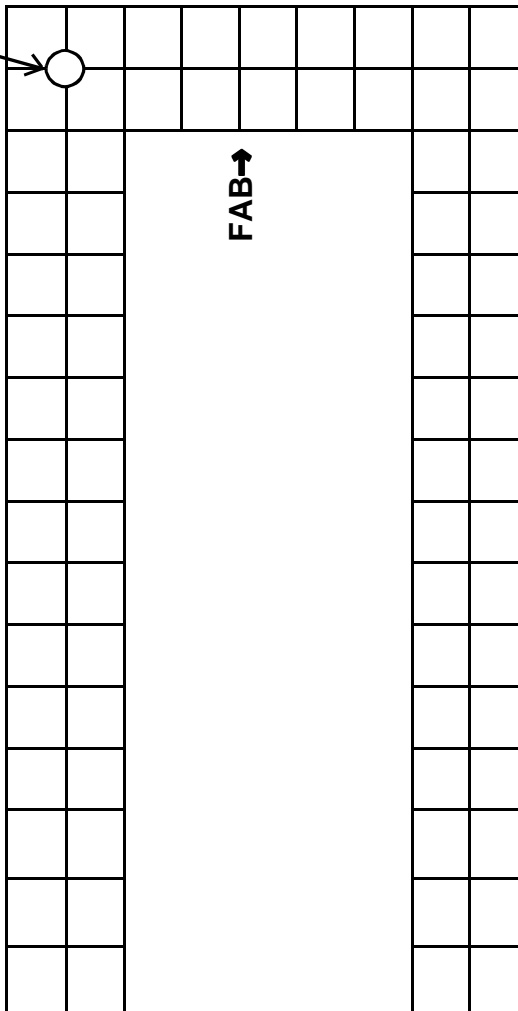
# 1999 NATIONAL MINE RESCUE CONTEST

## September 22, 1999



# Bleeder Entries

Bleeder Shaft



1 Left

2 Left

Main East

**1999 National Mine Rescue Contest  
September 22, 1999**

**STATEMENT**

**I am \_\_\_\_\_, Superintendent of the No. 1 Mine. You are located at the fresh air base in the bleeder entries between 1 Left and 2 Left sections driven off Main East.**

**A five (5) man crew entered the 1 Left section on the day shift to begin preparation for repair and for removal of equipment as the bleeder entries from 1 Left to 2 Left sections were completed.**

**At the completion of the shift, the crew failed to return to the surface and could not be contacted by mine phone. The shift foreman traveled into the 1 Left section, but was unable to reach the crew due to hip deep water in the No. 1 Entry near the intake regulator and caved airtight across the Nos. 2 and 3 Entries. No methane, smoke or low oxygen were found in these entries. He then attempted to reach the crew by traveling through the bleeder entries from 2 Left to 1 Left, but encountered caved airtight across the No. 1 and No. 2 bleeder entries and methane and low oxygen in the No. 3 bleeder entry.**

**The shift foreman, with assistance from other miners, established ventilation through the fresh air base and erected a temporary stopping and a check curtain across the No. 3 bleeder entry inby the fresh air base.**

**The mine is ventilated by an exhaust fan installed on the surface. The fan is operating and must remain on to ventilate the remainder of the mine.**

**A bleeder shaft is present in the No. 2 Entry of 1 Left section. Installation of an exhaust fan for this shaft was completed today, but the fan is not running. This fan may be started and stopped by notifying the Superintendent.**

**All electrical circuits inby the fresh air base have been de-energized, locked-out and guarded.**

**Unless otherwise indicated, the coal is walking height and the roof is supported by roof bolts.**

**Water and explosive gases have been encountered at this mine.**

**Fully equipped and properly trained mine rescue teams are here to serve as backup while you are in by the fresh-air base.**

**The mine maps are up-to-date.**

**We have a competent lifeline person to give and return signals. (point this person out)**

**Mine maps and written instructions will be provided when you are ready to work.**

# **1999 National Mine Rescue Contest**

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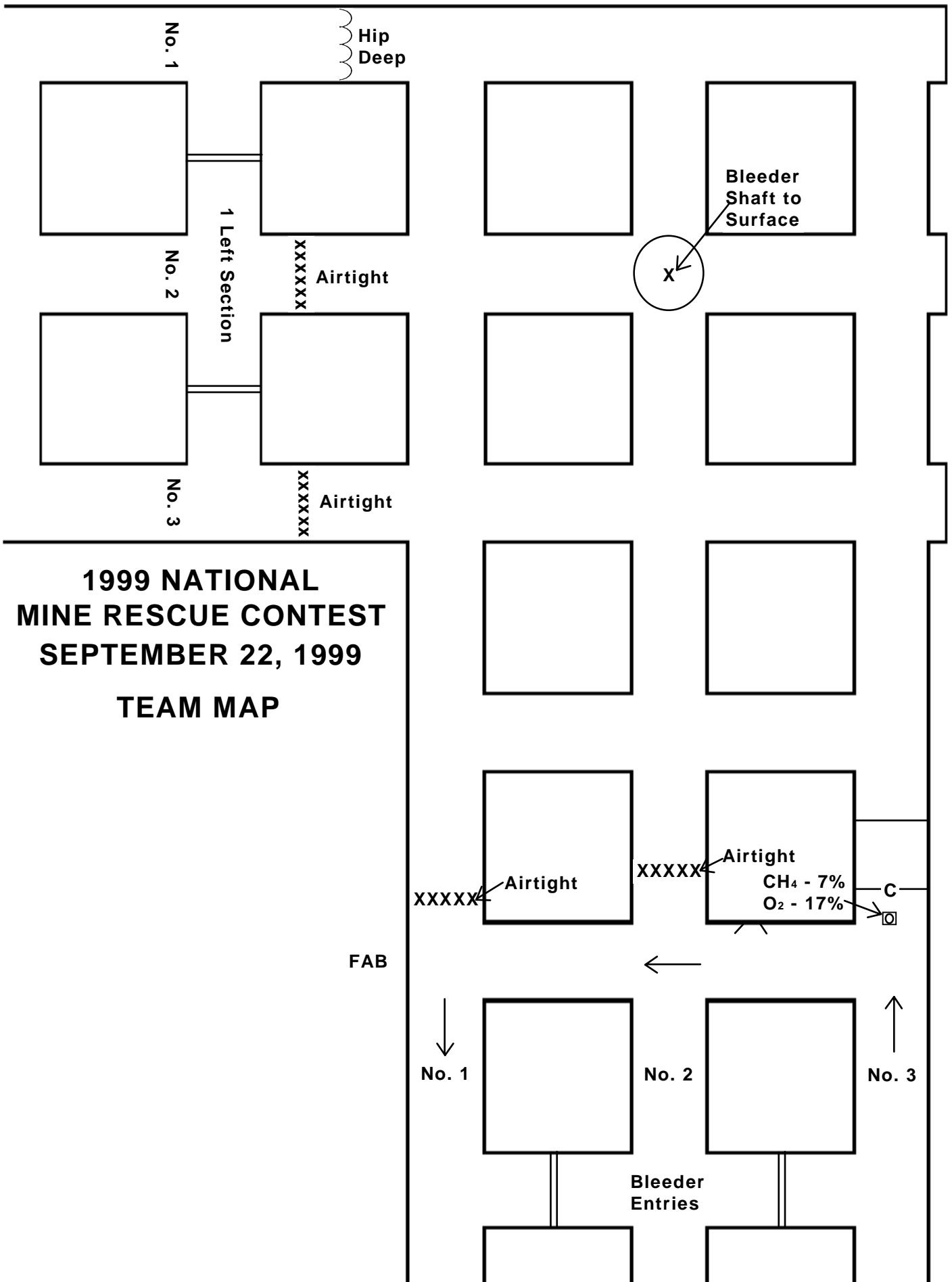
## **PROBLEM**

**ACCOUNT FOR ALL MISSING PERSONS**

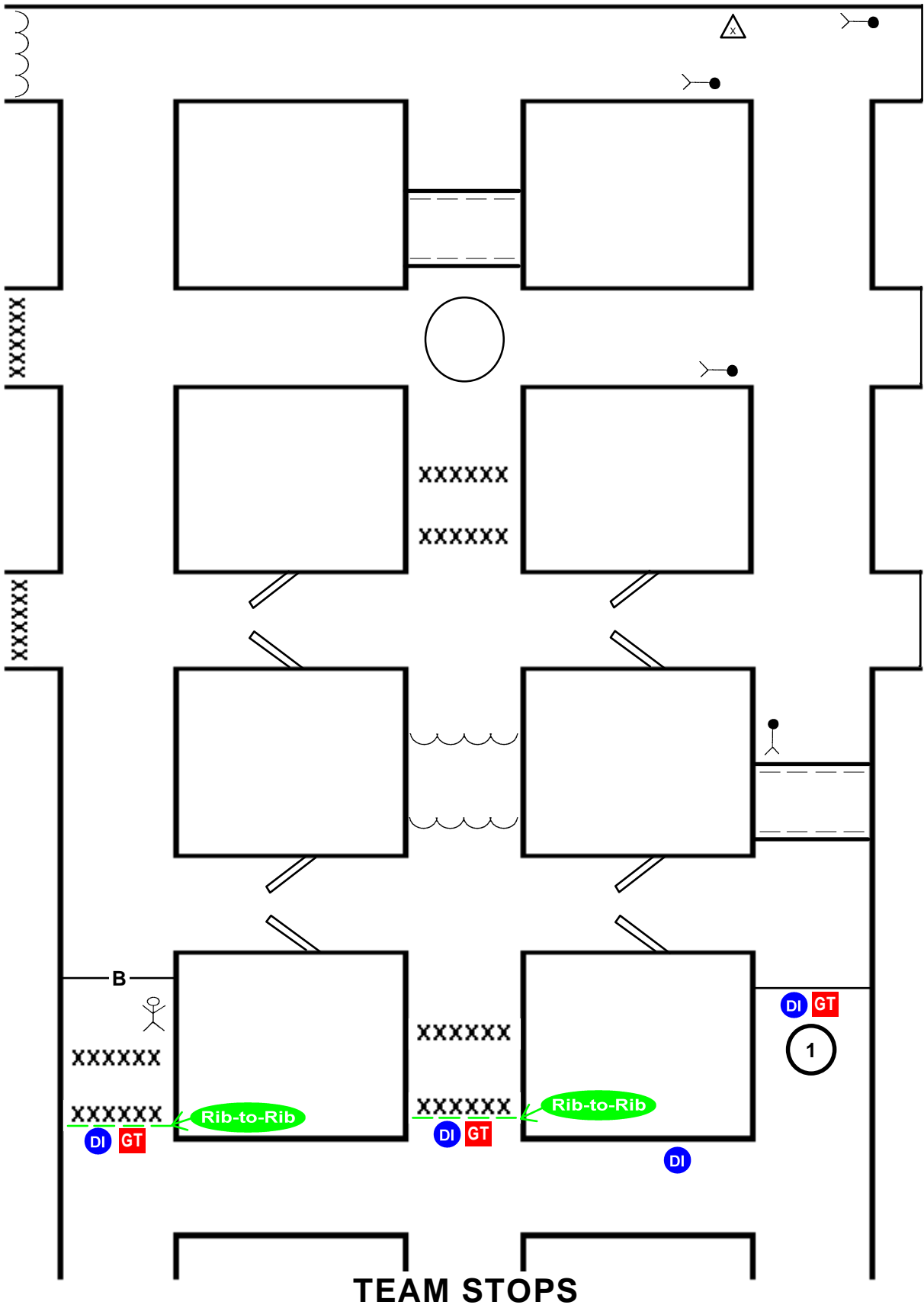
**EXPLORE ALL AREAS OF THE MINE**

**THAT CAN BE SAFELY EXAMINED**





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# **JUDGES EXPLORATION BRIEFING**

## **1999 NATIONAL MINE RESCUE CONTEST**

### **September 22, 1999**

Teams arriving at the fresh air base will examine three (3) entrances and conduct gas tests for each prior to the entire team going in by the fresh air base (Rule 23C). The gas tests for the No. 3 entrance should be conducted at the temporary stopping, which will suffice for the entrance. If no tests are conducted at the stopping, discount under Rule 23A.

Roof tests (rib-to-rib) are required at (1) the outby side of the caved airtight in the No. 1 Entry and (2) the outby side of the caved airtight in the No. 2 Entry (Rule 22).

DI's are required (1) on the check board (team number also) (Rule 25), (2) at outby the caved airtight in the No. 1 Entry and (3) at outby the caved airtight in the No. 2 Entry and (4) on the temporary stopping in the No. 3 Entry (Rule 26).

#### **TEAM STOP NO. 1**

The team will advance to the temporary stopping in the No. 3 Entry. At this team stop, all team members and apparatus must be checked (50' test) (Rule 27).

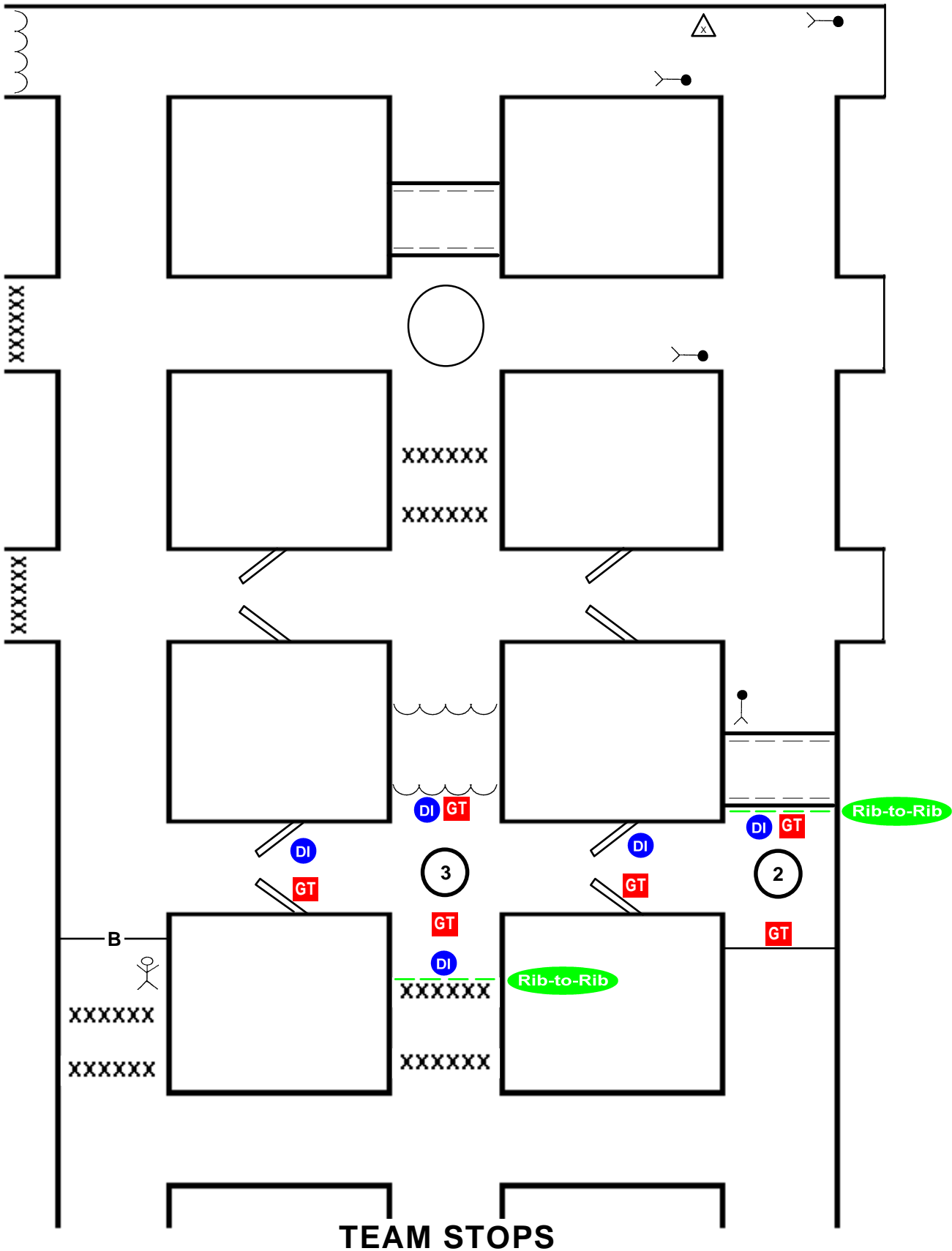
If a gas test was conducted at the temporary stopping prior to the entire team going underground, a gas test will not be required.

Roof tests (rib-to-rib) are required at the location of the check curtain prior to converting to a temporary stopping (Rule 22).

An airlock must be provided prior to breaching the temporary stopping (Rule 42). When the temporary stopping has been breached, the captain must perform gas tests for the area prior to other team members entering the area (Rule 23D).

DI is required on the check curtain converted to a temporary stopping (Rule 26).

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## **TEAM STOP NO. 2**

The team will advance to the 1st intersection of the No. 3 Entry.

Gas tests are required for the openings (2) of the intersection (Rule 23B). The gas tests for the opening (crosscut) toward the No. 2 Entry should be conducted at the partially destroyed permanent stopping, which will suffice for the opening. If no tests are conducted at the stopping, discount under Rule 23A.

Roof tests (rib-to-rib) are required at the outby side of the unsafe roof in the No. 3 Entry (Rule 22).

DI's are required at (1) the outby side of the unsafe roof in the No. 3 Entry and (2) the partially destroyed permanent stopping in the crosscut towards the No. 2 Entry (Rule 26).

## **TEAM STOP NO. 3**

The team will advance to the 1st intersection of the No. 2 Entry.

Gas tests are required for the openings (3) of the intersection (Rule 23B). The gas tests for the opening (crosscut) toward the No. 1 Entry should be conducted at the partially destroyed permanent stopping, which will suffice for the opening. If no tests are conducted at the stopping, discount under Rule 23A.

Roof tests (rib-to-rib) are required at the inby side of the caved airtight in the No. 2 Entry (Rule 22).

DI's are required at (1) the inby side of the caved airtight in the No. 2 Entry, (2) the outby side of the water over knee deep in the No. 2 Entry and (3) the partially destroyed permanent stopping in the crosscut towards the No. 1 Entry (Rule 26)

The diagram shows a building layout with the following features:

- Rooms:** A large room on the right, a medium room in the center, and several smaller rooms on the left and bottom.
- Corridors:** A central corridor with a circle, and other corridors connecting the rooms.
- Symbols:**
  - GT (Green Triangle):** Located in the top right, middle left, and bottom left.
  - DI (Blue Circle):** Located in the middle left and bottom left.
  - Rib (Green Oval):** Located in the top left.
  - B (Black Circle):** Located in the middle left.
  - X (Black Cross):** Located in the middle left and bottom left.
- Labels:** The numbers '4' and '5' are circled in the middle left area.

## TEAM STOPS

## **TEAM STOP NO. 4**

The team will advance to the 1st intersection of the No. 1 Entry.

Gas tests are required for the openings (2) of the intersection (Rule 23B). The gas tests for the opening outby the intersection of the No. 1 Entry should be conducted at the barricade, which will suffice for the opening. If no tests are conducted at the barricade, discount under Rule 23A.

No roof tests required at this team stop.

DI is required on the barricade in the No. 1 Entry (Rule 26).

## **TEAM STOP NO. 5**

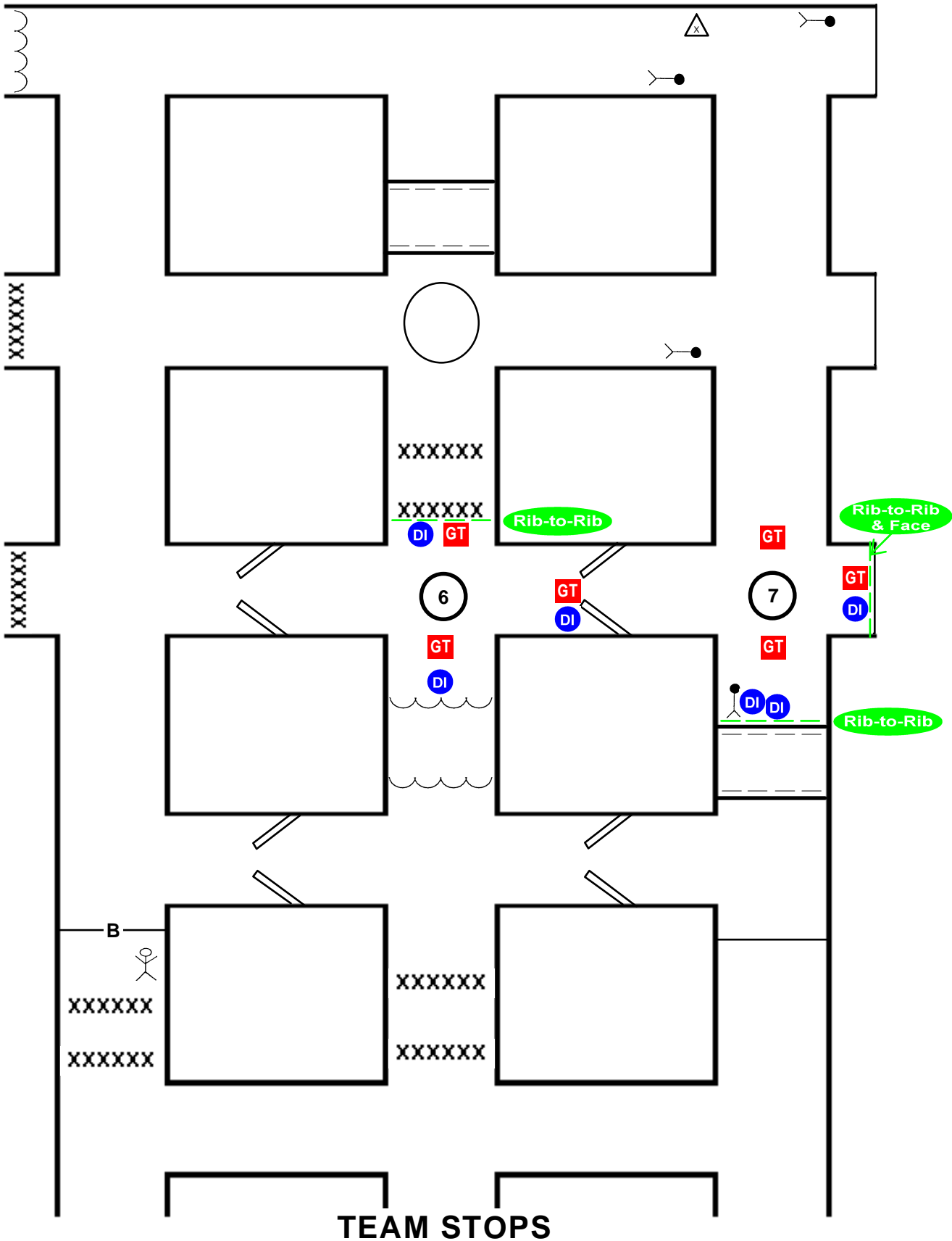
The team will advance to the 2nd intersection of the No. 1 Entry.

Gas tests are required for the openings (3) of the intersection (Rule 23B). The gas tests for the opening (crosscut) toward the No. 2 Entry should be conducted at the partially destroyed permanent stopping, which will suffice for the opening. If no tests are conducted at the stopping, discount under Rule 23A.

Roof tests (rib-to-rib) are required at the caved airtight in the left opening off the No. 1 Entry (Rule 22).

DI's are required at (1) the caved airtight in the left opening off the No. 1 Entry and (2) the partially destroyed permanent stopping in the opening (crosscut) toward the No. 2 Entry (Rule 26).

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## **TEAM STOP NO. 6**

The team must advance to the 2nd intersection of the No. 2 Entry. (Rule 44A).

Gas tests are required for the openings (3) of the intersection (Rule 23B). The gas tests for the opening (crosscut) toward the No. 3 Entry should be conducted at the partially destroyed stopping, which will suffice for the opening. If no tests are conducted at the stopping, discount under Rule 23A.

Roof tests (rib-to-rib) are required at the outby side of the caved in the No. 2 Entry (Rule 22).

DI's are required at (1) the inby side of water over knee deep in the No. 2 Entry, (2) the outby side of the caved in the No. 2 Entry and (3) the partially destroyed permanent stopping in the crosscut toward the No. 3 Entry (Rule 26).

## **TEAM STOP NO. 7**

The team must advance to the 2nd intersection of the No. 3 Entry (Rule 44A).

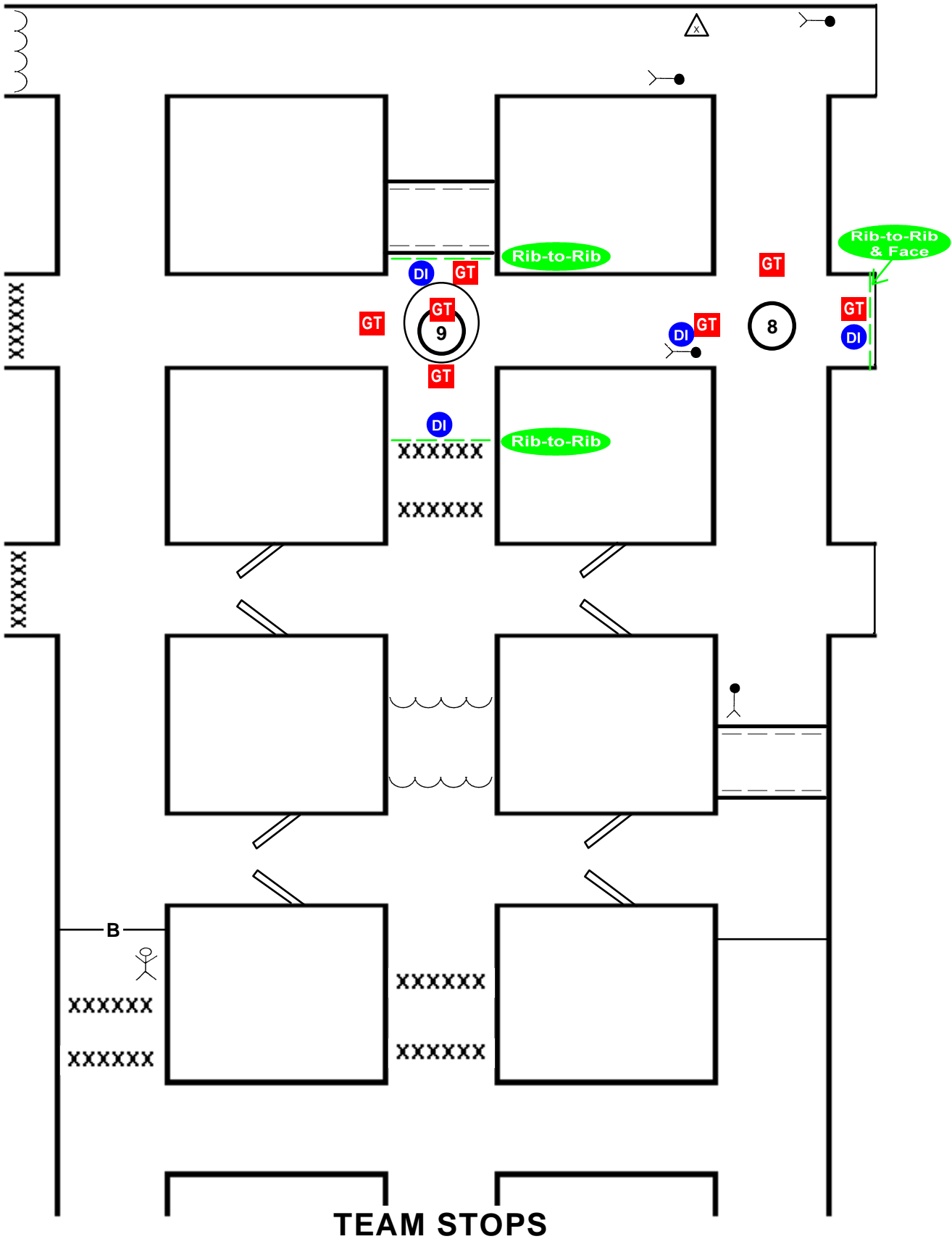
Gas tests are required for the openings (3) of the intersection (Rule 23B). The gas tests for the right opening off the No. 3 Entry should be conducted at the face, which will suffice for the opening. If no tests are conducted at the face, discount under Rule 23A.

Roof tests (rib-to-rib and face) are required at (1) the face in the right opening off the No. 3 Entry and (2) the inby side of the unsafe roof in the No. 3 Entry (Rule 22).

DI's are required at (1) the face in the right opening off the No. 3 Entry, (2) the inby side of the unsafe roof in the No. 3 Entry and (3) the location of the body in the No. 3 Entry (Rule 26).

At this team stop the captain must physically examine (by touching with his or her hand) the body located in the No. 3 Entry (Rule 31).

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## **TEAM STOP NO. 8**

The team must advance to the 3rd intersection of the No. 3 Entry (Rule 44B).

Gas tests are required for the openings (3) of the intersection (Rule 23B). The gas tests for the right opening off the No. 3 Entry should be conducted at the face, which will suffice for the opening. If no tests are conducted at the face, discount under Rule 23A.

Roof tests (rib-to-rib and face) are required at the face in the right opening off the No. 3 Entry (Rule 22).

DI's are required at (1) the face in the right opening off the No. 3 Entry and (2) the location of the body in the crosscut towards the No. 2 Entry.

At this team stop, smoke will be encountered inby the intersection. When any work is performed inby the imaginary line of the opening (such as gas tests), all team members must be attached to the lifeline (Rule 21).

Also at this team stop, the captain must physically examine (by touching with his or her hand) the body located in the crosscut towards the No. 2 Entry (Rule 31).

## **TEAM STOP NO. 9**

The team must advance to the 3rd intersection of the No. 2 Entry (Rule 44C).

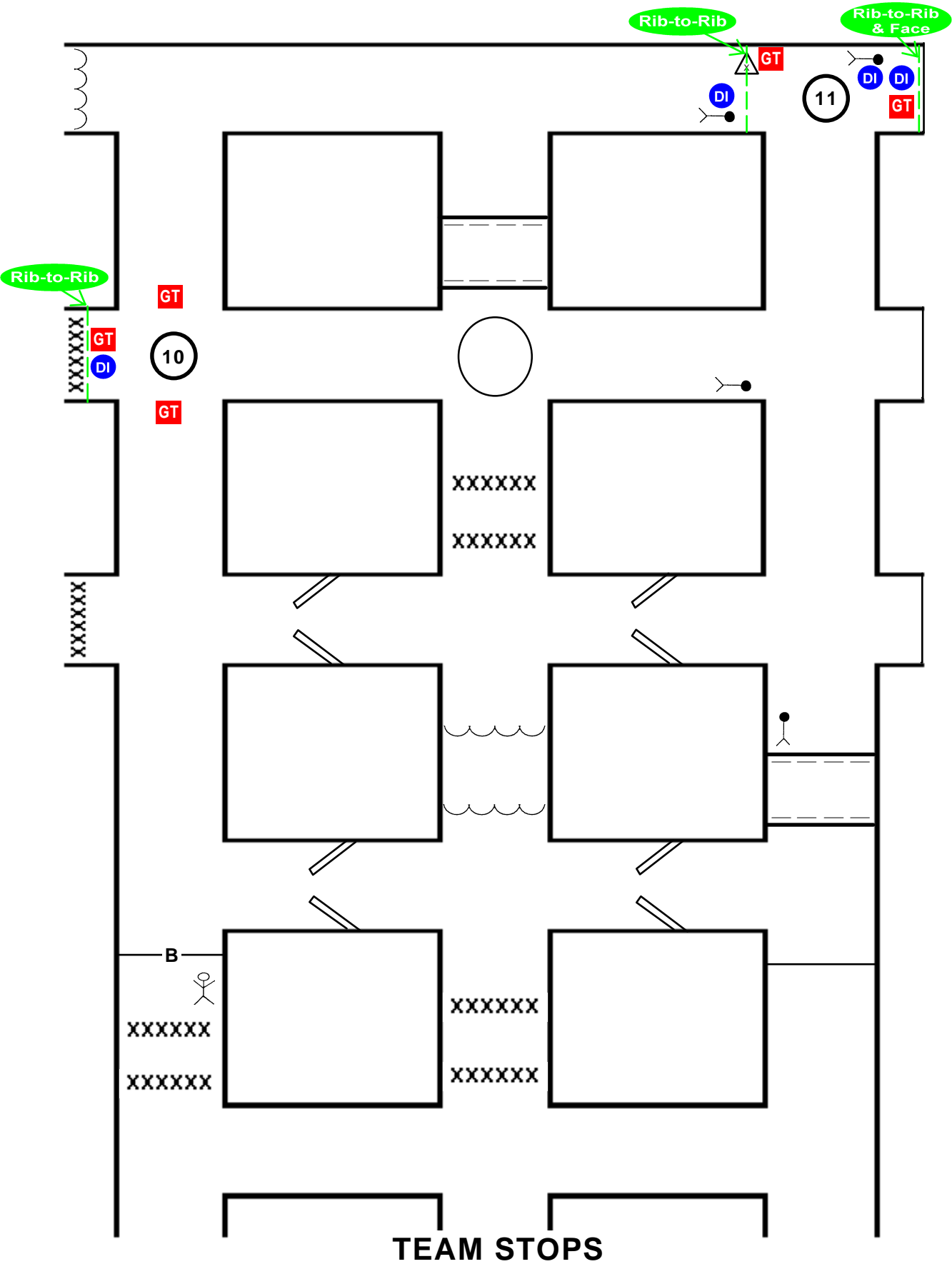
Gas tests are required for the openings (3) of the intersection (Rule 23B).

Gas tests will also be required for the bleeder shaft (Rule 23B).

Roof tests (rib-to-rib) are required at (1) the inby side of the caved in the No. 2 Entry and (2) the outby side of the unsafe roof in the No. 2 Entry (Rule 22).

DI's are required at (1) the inby side of the caved in the No. 2 Entry and (2) the outby side of the unsafe roof in the No. 2 Entry (Rule 26).

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## **TEAM STOP NO. 10**

The team must advance to the 3rd intersection of the No. 1 Entry (Rule 44C).

Gas tests are required for the openings (3) of the intersection (Rule 23B).

Roof tests (rib-to-rib) are required at the caved airtight in the left opening off the No. 1 Entry (Rule 22).

DI is required at the caved airtight in the left opening off the No. 1 Entry (Rule 26).

## **TEAM STOP NO. 11**

The team must advance to the 4th intersection of the No. 3 Entry (Rule 44B).

Gas tests are required for the openings (2) of the intersection (Rule 23B). The gas tests for the opening (crosscut) toward the No. 2 Entry should be conducted at the fire, which will suffice for the opening. If no tests are conducted at the fire, discount under Rule 23A. The gas tests for the right opening off the No. 3 Entry should be conducted at the face, which will suffice for the opening. If no tests are conducted at the face, discount under Rule 23A.

Roof tests are required at (1) the face (rib-to-rib and face) in the right opening off the No. 3 Entry and (2) prior to extinguishing the fire (rib-to-rib) in the crosscut towards the No. 2 Entry (Rule 22).

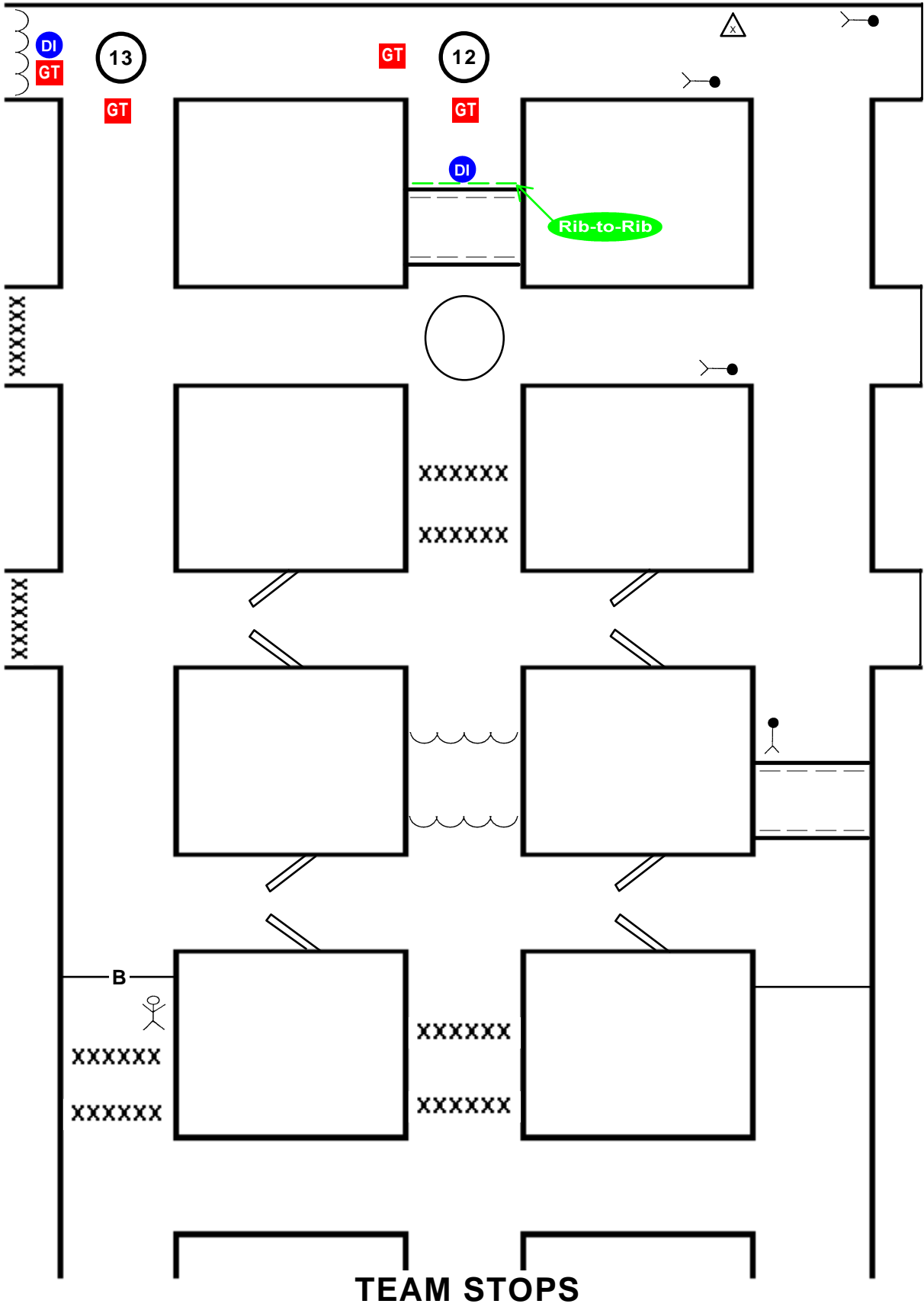
**\* Note:** Roof tests (rib-to-rib) will be required at fire location each time that the team passes the location (Rule 22).

DI's are required at (1) the face in the right opening off the No. 3 Entry, (2) the location of the body in the intersection, and (3) the location of the body in the crosscut towards the No. 2 Entry.

All team members must be attached to the lifeline during this team stop due to the presence of smoke. (Rule 21).

Also at this team stop the captain must physically examine (by touching with his or her hand) the body located in the intersection and the body located in the crosscut towards the No. 2 Entry (Rule 31).

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## **TEAM STOP NO. 12**

The team will advance to the 4th intersection of the No. 2 Entry.

Gas tests are required for the openings (2) of the intersection (Rule 23B).

Roof tests are required at inby side of the unsafe roof in the No. 2 Entry (Rule 22).

DI is required at the inby side of the unsafe roof in the No. 2 Entry (Rule 26).

All team members must be attached to the lifeline during this team stop due to the presence of smoke (Rule 21).

## **TEAM STOP NO. 13**

The team will advance to the 4th intersection of the No. 1 Entry.

Gas tests are required for the openings (2) of the intersection (Rule 23B).

No roof tests required at this team stop.

DI is required at the water hip deep in the left opening off the No. 1 Entry (Rule 26).

All team members must be attached to the lifeline during this team stop due to the presence of smoke (Rule 21).

The team must now prepare to remove the irrespirable atmosphere (75PPM of CO) outside the barricade outby the 1st intersection in the No. 1 Entry (Rule 33).

**1ST VENTILATION CHANGE**

## 1ST VENTILATION CHANGE



## 1ST VENTILATION CHANGE

1. Build a stopping in the No. 1 Entry inby the 3rd intersection.
2. Build a stopping in the No. 2 Entry inby the 3rd intersection.
3. Team must notify the superintendent to have the bleeder fan turned on.

\* **NOTE:** Judges will locate placards/ventilation arrows to indicate ventilation route of travel.

\* **NOTE:** Judges will remove smoke placards and place a placard indicating smoke in the right opening off the No. 3 Entry.

\* **NOTE:** Roof tests (rib-to-rib) are required at each location in which stoppings are erected (Rule 22).

\* **NOTE:** The captain must DI each stopping erected (Rule 26).

## 2ND VENTILATION CHANGE


## 2ND VENTILATION CHANGE

The team may request the superintendent to stop the bleeder fan while change is being conducted. If fan is stopped the stoppings may be erected in any sequence.

1. Build a stopping in the 3rd crosscut between the Nos. 1 and 2 entries.
2. Build a stopping in the No. 2 Entry inby the 2nd intersection.
3. Build a stopping in the 4th crosscut between the Nos. 1 and 2 entries.
4. Remove the stopping (No. 1 build of 1st ventilation change) in the No. 1 Entry inby the 3rd intersection.

\* **NOTE:** Judges will locate placards/ventilation arrows to indicate ventilation route of travel.

\* **NOTE:** Judges will remove the contaminant placard ( $\text{CH}_4$  - 7% and  $\text{O}_2$  - 17%) inby the 2nd intersection in the No. 3 Entry.

\* **NOTE:**  Upon re-entry into any area where the ventilation has been changed, teams shall conduct gas tests at all locations in which placards ( $\text{CO}$ ,  $\text{CH}_4$  or  $\text{O}_2$ ) were encountered on initial exploration. Tests shall be conducted prior to the entire team passing the location (Rule 23F).

\* **NOTE:**  Roof tests (rib-to-rib) are required at each location in which stoppings are erected (Rule 22).

\* **NOTE:**  The captain must DI each stopping erected (Rule 26).

[illegible]

### 3RD VENTILATION CHANGE

### 3RD VENTILATION CHANGE

The team may request the superintendent to stop the bleeder fan while change is being conducted.

If the fan is stopped the stoppings may be erected in any sequence.

1. Rebuild the stopping in the No. 1 Entry inby the 3rd intersection.
2. Build a stopping in the 3rd crosscut between the Nos. 2 and 3 entries.
3. Build a stopping in the 2nd crosscut between the Nos. 2 and 3 entries.
4. Build a stopping in the No. 2 Entry inby the 1st intersection.

**\* NOTE:** An alternate method for builds 3 and 4 is also acceptable. (See 3rd ventilation change map).

5. Remove stopping in the 4th crosscut between the Nos. 1 and 2 entries.

6. Remove stopping in 3rd crosscut between the Nos. 1 and 2 entries.

**\* NOTE:** Judges will locate placards/ventilation arrows to indicate the ventilation route of travel.

**\* NOTE:** Judges will remove the contaminant placard ( $\text{CH}_4$  - 7% and  $\text{O}_2$  - 17%) in the 1st crosscut between the Nos. 2 and 3 entries.

**\* NOTE:** Upon re-entry into any area where the ventilation has been changed, teams shall conduct gas tests at all locations in which placards ( $\text{CO}$ ,  $\text{CH}_4$  or  $\text{O}_2$ ) were encountered on initial exploration. Tests shall be conducted prior to the entire team passing the location (Rule 23F).

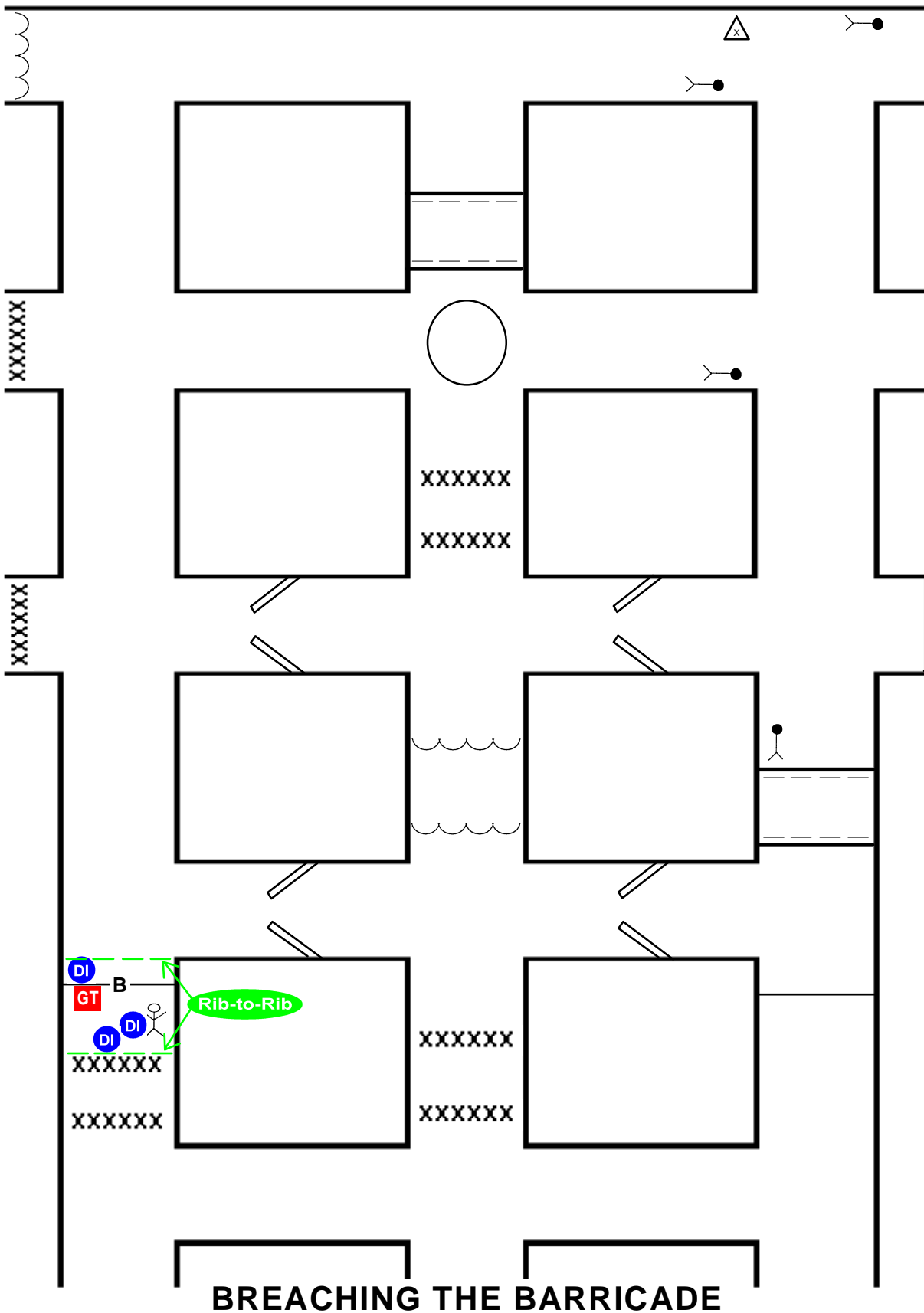
**\* NOTE:** Roof tests (rib-to-rib) are required at each location in which stoppings are erected (Rule 22).

**\* NOTE:** The captain must DI each stopping erected (Rule 26).

Hang or hold line curtain to within five (5) feet of the barricade.

# 1999 NATIONAL MINE RESCUE CONTEST

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## BREACHING THE BARRICADE

A temporary stopping (airlock) is required to be erected prior to breaching the barricade (Rule 42).

Roof tests (rib-to-rib) are required at the location of the temporary stopping (airlock) to be erected (Rule 22).

DI is required for the temporary stopping (airlock) erected (Rule 26).

Gas tests must be conducted by the captain prior to any team member entering the area behind the barricade (Rule 23D).

Roof tests (rib-to-rib) are required on the inby side of the caved airtight (Rule 22).

DI's are required at (1) the location of the unconscious live person and (2) the inby side of the caved airtight (Rule 26).

The team must properly protect the unconscious live person by an approved apparatus with full face piece upon his removal to the fresh air base (Rule 33).

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**Superintendent's Instructions**

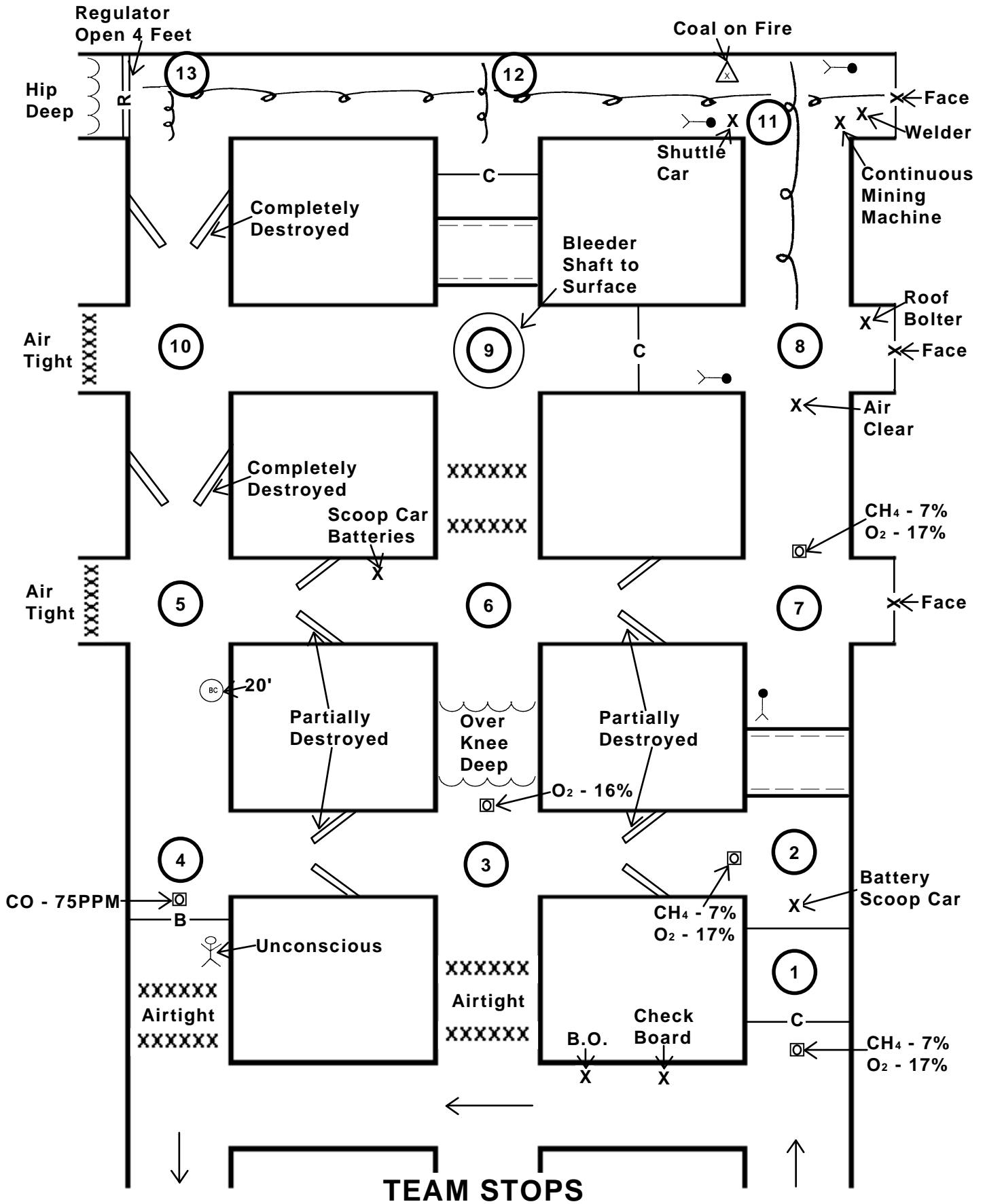
**When notified by the team to start the  
bleeder fan, respond by stating the  
“Fan is On”.**

**When notified by the team to stop the fan,  
respond by stating the  
“Fan is Off”.**

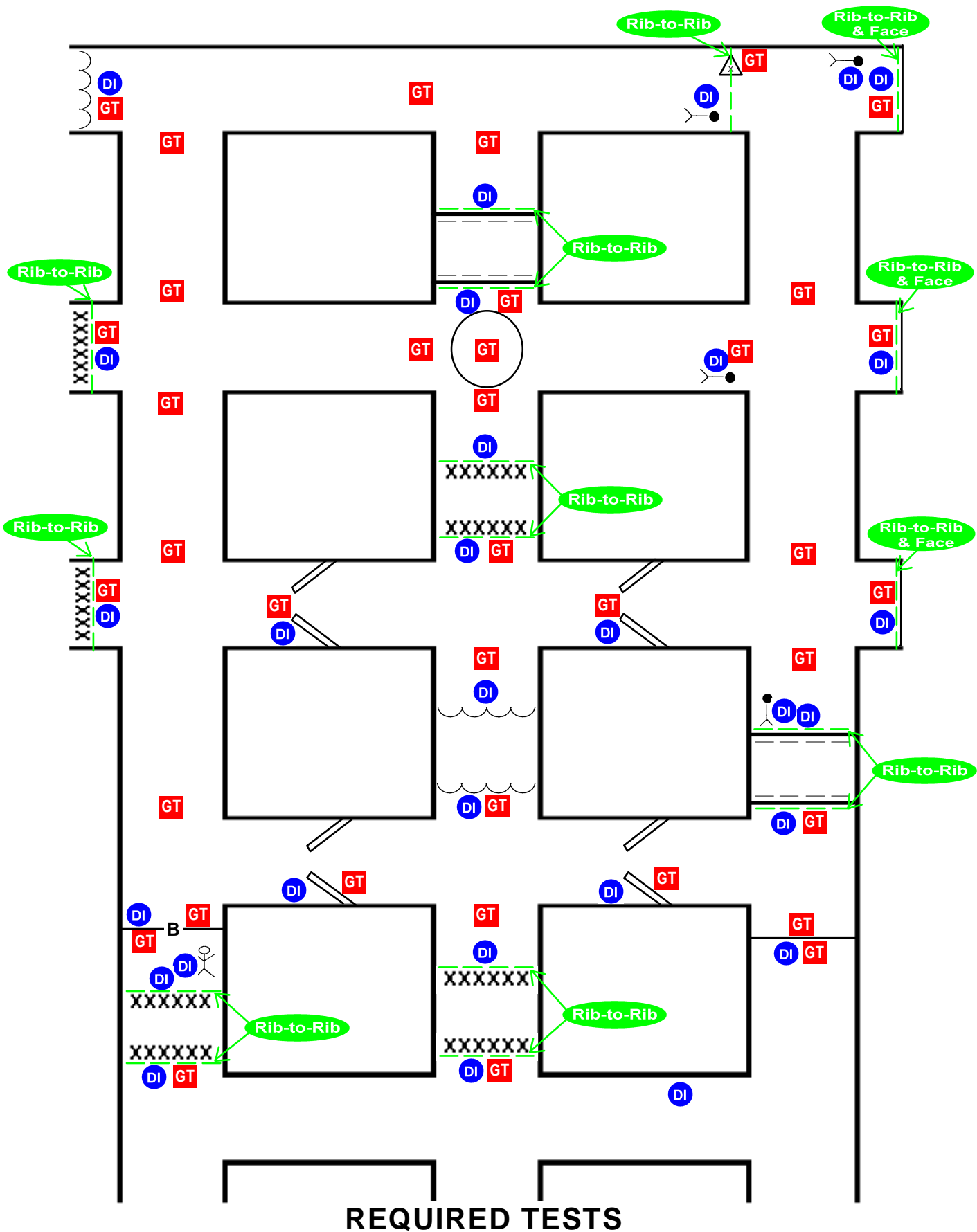


# 1999 NATIONAL MINE RESCUE CONTEST

## September 22, 1999



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## JUDGES WORKING MAP

